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WASHINGTON, DC 20005

EXAMINER

LIEW, ALEX KOK SOON

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/647,471	Applicant(s) ZYZDRYN, GREGORY	
	Examiner Alex Liew	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1:136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The amendment filed on March 13, 2007 is entered and made of record.

Response to Applicant's Arguments

On pages 11 and 12, the applicant states: [O'Gorman does not disclose combining images in a way that is a function of roll (or even of swipe) speed. O'Gorman discloses using image correlation on a frame-by-frame basis to find the location of overlap. O'Gorman does not use swipe speed to do this. According to O'Gorman, swipe speed does not matter as long as at least one image slice overlaps another. (See paragraph [0040], last sentence, and paragraph [0056], last sentence, for example) In fact, O'Gorman states in paragraph [0037] that "embodiment of the methods of the present invention operate independent of swipe speed." This statement alone appears to teach away from the present invention. Although O'Gorman's disclosure discusses briefly that swipe speed variation is detectable using the methods disclosed (see paragraph [0087], for example), it does no use swipe speed in its reconstruction of print images.]

The examiner disagrees with the applicant, where the frame-to-frame image correlation of the fingerprint image slices does depend on the swipe speed. The amount of overlap depends on the speed at which the finger moves across the swipe sensor, which is disclosed by O'Gorman (US pub no 2003/0123714), paragraph 80, when the finger moves across the sensor "too fast" there will be little or even no overlap between the fingerprint image slices. Vice versa, when the finger moves across the slower than the

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'normal' speed there will be more overlap, and this overlap is detected by the correlation method, which then use to reconstruct the entire fingerprint image.

To address "embodiment of the methods of the present invention operate independent of swipe speed" is one of the first part of the discussion of O'Gorman, in later sections, O'Gorman discusses the fingerprint sensor allows for an unlimited variation in swipe speed, which is important because the user does not have to be limited to one or a set of required swipe speed, paragraph 76. Then, O'Gorman further discussed the different types of swipe speed such as uniform swipe speed, "too fast" swipe speed, increasing swipe speed and decreasing swipe speed, shown in figures 4 to 7, respectively. In conclusion, the invention of Martinez (US pat no 6,483,932) combined with O'Gorman discloses the claimed invention of claim 1.

With regards to other independent claims, claims 8, 13,14, 21 and 26, see the arguments for claim 1.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. Claims 1 – 6, 8 – 11, 13 – 19, 21 – 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martinez (US pat no 6,483,932) in view of O'Gorman (US pub no 2003/0123714).

With regards to claim 1, Martinez discloses a method for capture of a fingerprint image as a finger is rolled across a platen surface, comprising the steps of

capturing a plurality of fingerprint image frames, each captured framed including pixel data representative of a print on the platen surface at a time of capture as the finger is rolled across the platen surface (see fig 1 – 108 and fig 3A – 304 and 306) and combining said plurality of captured fingerprint image frames into a composite fingerprint image (see fig 3 – 310).

But fails to disclose combining image step as a function of roll speed. Martinez does suggest prompting the user to select preferred roll speed, where the fingerprint sensor will scan the rolling fingerprint at a constant speed. If there is any deviation in speed from the user, there will be knitting errors composing the final fingerprint image.

O'Gorman discloses a fingerprint images combining step includes at least partially blending pixel data in successive frames as a function of swipe speed of the finger across the platen surface (see paragraph 56 – image slices S1 – SN are combined one by one using image correlation to determine the border and overlaps on each image slice, where the overlaps depend on the swipe speed of the finger as it moves across the swipe sensor). Even though, O'Gorman does not teach *rolling* fingerprint onto a

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platen sensor, however, the image combine step is an image processing step, herein taking multiple captured images / frames and combining / knitting them into a composite image, which is also well known in the fingerprint image processing art.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include combining image step as a function of roll speed because to reconstruct the fingerprint while the user has the flexible of speeding or slowing his/ her rolling speed, without having to worry about rolling their finger on the sensor a second or third time, saving time and minimizing reconstruction of the fingerprint image errors.

With regards to claim 2, Martinez discloses all of the claim elements / features as discussed above in rejection for claim 1 and incorporated herein by reference. Martinez also discloses using centroid window to capture fingerprint slice images (see fig 6) and using the consecutive image slices to determine pixel intensity difference count between the current and previous image slices (see col. 9 lines 45 – 56), but does not determine the boundary of each image slice.

O'Gorman discloses a method of claim 1, wherein said combining step includes the further step of identifying at least one boundary region in a plurality of captured fingerprint image frames and blending pixel data in said boundary region (see paragraph 58 lines 6 – 9 and fig 4 – (A) and (B) are blending / overlapping regions of the fingerprint image slices). Motivation provided in claim 1 for combining Martinez and O'Gorman.

With regards to claim 3, Martinez discloses all of the claim elements / features as discussed above in rejection for claim 1 and incorporated herein by reference, but fails to disclose blending function to calculate composite fingerprint image.

O'Gorman discloses a method of claim 2, wherein said blending uses a blending function to calculate for said composite fingerprint image a pixel value for a number of pixels in said boundary region (see paragraph 58 lines 6 – 9 – the correlation function is read as the blending function, because correlation function determines the region where the image slices overlap), said pixel value based on the values of a plurality of corresponding pixels in said plurality of fingerprint image frames where said number of pixels varies with swipe speed (see paragraph 86 lines 1 – 4 – when the user increase its finger rolling speed, region B in fig 6 covers more pixels, when the user roll its finger at a 'normal' speed the overlapping region will cover less pixels shown in fig 4 – region B). Motivation provided in claim 1 for combining Martinez and O'Gorman.

With regards to claim 4, Martinez discloses all of the claim elements / features as discussed above in rejection for claim 1 and incorporated herein by reference, but fails to disclose assigning a variable to a pixel value. It is well known in the art to assign heavier weighs to pixels as larger values and the less important pixels as smaller weighs. O'Gorman shows that those regions where the fingerprint images that are overlapped are discarded because those are just repeating pixels, which O'Gorman did not give any weighs to (see fig 3 – store first slice and non-overlapped portion of next

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slice). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include assigning a variable to a pixel value because to show pixel locations where pixels are regard as the non repeating pixels keeping those to generate the final composite image.

With regards to claim 5, Martinez discloses all of the claim elements / features as discussed above in rejection for claim 1 and incorporated herein by reference, but fails to disclose blending is applied to determine the value of a majority of pixels in said boundary region.

O'Gorman discloses a method of claim 3, wherein said blending is applied to determine the value of a majority of pixels in said boundary region (see fig 3 – Store first slice and non-overlapped portion of next slice – the majority of the pixels are the pixels which are determine to be the composite image of two fingerprint image slice – the boundary region is located between the first slice and non-overlapped portion – for example fig 4 with the combination of region S1 and (S2 – region A and B)). Motivation provided in claim 1 for combining Martinez and O'Gorman.

With regards to claim 6, Martinez discloses a method of claim 1, wherein in said step of capturing a plurality of fingerprint image frames, said frames are captured periodically at equal intervals t as the finger is rolled across the platen surface (see fig 9 – the user can set the roll speed using tuning device, lower left corner of the figure, the set speed on the roll speed determines the value of t).

With regards to claim 8, see the rationale and rejection for claim 2.

With regards to claim 9, see the rationale and rejection for claim 4.

With regards to claim 10, see the rationale and rejection for claim 5.

With regards to claim 11, see the rationale and rejection for claims 1 and 2.

With regards to claim 13, see the rationale and rejection for claim 2.

With regards to claim 14, see the rationale and rejection for claim 1.

With regards to claim 15, see the rationale and rejection for claim 2.

With regards to claim 16, see the rationale and rejection for claim 3.

With regards to claim 17, see the rationale and rejection for claim 4.

With regards to claim 18, see the rationale and rejection for claim 5.

With regards to claim 19, see the rationale and rejection for claim 1.

With regards to claim 21, see the rationale and rejection for claims 1 and 4.

With regards to claims 22 and 23, see the rationale and rejection for claim 4.

With regards to claim 24, see the rationale and rejection for claim 6.

With regards to claim 26, see the rationale and rejection for claim 1.

3. Claims 7, 12, 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martinez (US pat no 6,483,932) in view of O'Gorman (US pub no 2003/0123714) as applied to claim 6 further in view of Upton (US pat no 5,864,296).

With regards to claim 7, Martinez discloses all of the claim elements / features as discussed above in rejection for claim 1 and incorporated herein by reference and identifying within each fingerprint image frame a subset region containing the fingerprint image (see fig 6 – 606 – centroid window), but fails to disclose determining roll speed. Upton discloses determining said roll speed based on the relative change in location of said subset regions between one captured fingerprint image frame selected as a swipe speed reference frame and a fingerprint image frame captured after capture of swipe speed reference frame (see col. 10 lines 33 – 56 – the sensor measures the speed of

the fingerprint as it swipes repeatedly through the sensor shown in fig 12 as the velocity waveform).

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include determining roll speed because the velocity and trajectory of the finger is sweep through the image sensor can be use a mean to further verify any individual who being identify (see Upton col. 10 lines 52 – 56).

With regards to claims 12, 20 and 25, see the rationale and rejection for claim 1.

Conclusion

This action is made final. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shorten statutory period for reply to this final action is set to expire three months from the mailing date of this action. In the event a first reply is filed within two months of the mailing date of this final action and the advisory action is not mailed until after the end of the three-month shorten statutory period, then the shorten statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however will the statutory period for reply expire later than six months from the mailing date of the final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Liew whose telephone number is (571)272-8623. The examiner can normally be reached on 9:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571)272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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4/3/07



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